

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. (Currently Amended) A method for getting dump of a computer system that adopts virtual storage management by which virtual storage is available using a main storage, an auxiliary storage, and an address translation table for indicating a location in the main storage or in the auxiliary storage to which an individual virtual-storage area is allocated, said method comprising:

providing said auxiliary storage with a first auxiliary storage and a second auxiliary storage;

operating the computer system using either of the first auxiliary storage or the second auxiliary storage;

transferring content of the virtual-storage area on the main storage from the main storage to the auxiliary storage when a utilization ratio of the main storage becomes high;

determining a location to which the address translation table is allocated, when occurrence of a failure in the computer system is detected;

determining a location in the main storage, or in the auxiliary storage, where information in the virtual-storage

area is stored, which is described in the address translation table;

transferring the content of the virtual-storage area from the main storage to the auxiliary storage to which the content of the virtual-storage area is allocated when the utilization ratio of the main storage becomes high, if the content of the virtual-storage area is allocated to the main storage; and

switching the first auxiliary storage to the second auxiliary storage for use if the first auxiliary storage is used for operation, or switching the second auxiliary storage to the first auxiliary storage for use if the second auxiliary storage is used for operation.

2. (Currently Amended) A method for getting dump according to Claim 1, wherein:

from among the virtual-storage pages that have been allocated to the main storage, only areas[[,]] which have been updated since the areas were allocated to the main storage[[,]] are extracted, and are then transferred from the main storage to the auxiliary storage.

3. (Original) A method for getting dump according to Claim 1, wherein:

when occurrence of a failure in the computer system is detected, content of an area in the main storage, which has not been associated with the virtual storage by the address translation table, is stored in a given area in the auxiliary storage.

4. (Currently Amended) An apparatus for getting dump of a computer system that adopts virtual storage management by which virtual storage is available, said apparatus comprising:

an auxiliary storage comprising a first auxiliary storage and a second auxiliary storage;

a means for operating the computer system using either of the first auxiliary storage or the second auxiliary storage;

a means for transferring content of a virtual-storage area on a main storage from the main storage to the auxiliary storage when a utilization ratio of the main storage becomes high;

a means for determining a location in the main storage, or in the auxiliary storage, where information in a~~the~~ virtual-storage area is stored, according to an address

translation table when occurrence of a failure in the computer system is detected;

a means for transferring content of the virtual-storage area from the main storage to the auxiliary storage to which the content of the virtual-storage area is allocated when the utilization ratio of the main storage becomes high, if content of the virtual-storage area is allocated to the main storage, and if the content of the virtual-storage area has been updated since the virtual-storage area was allocated to the main storage; and

a means for switching the first auxiliary storage to the second auxiliary storage for use if the first auxiliary storage is used for operation, and for switching the second auxiliary storage to the first auxiliary storage for use if the second auxiliary storage is used for operation.

5. (Currently Amended) An apparatus for getting dump of a computer system that uses virtual storage, said apparatus comprising:

an auxiliary storage comprising a first auxiliary storage and a second auxiliary storage;

an address translation table for indicating a location in a main storage, or in the auxiliary storage, where information in a virtual-storage area is stored;

a means for transferring content of the virtual-storage area on the main storage from the main storage to the auxiliary storage when a utilization ratio of the main storage becomes high;

a means for transferring content of the virtual-storage area from the main storage to the auxiliary storage according to the address translation table when occurrence of a failure in the computer system is detected, if the content of the virtual-storage area is allocated to the main storage, and if the content of the virtual-storage area has been updated since the virtual-storage area was allocated to the main storage;  
and

a means for switching the first auxiliary storage to the second auxiliary storage for use if the first auxiliary storage is used for operation, and for switching the second auxiliary storage to the first auxiliary storage for use if the second auxiliary storage is used for operation.

6. (Currently Amended) A method for getting dump of a computer system that uses virtual storage, said method comprising the steps of:

controlling the virtual storage according to an address translation table that indicates a location in a main storage, or in a first auxiliary storage, where information in a virtual-storage area is stored;

transferring content of a virtual-storage area on the main storage from the main storage to the first auxiliary storage when a utilization ratio of the main storage becomes high;

storing the content of the virtual-storage area, which has been updated since the virtual-storage area was allocated to the main storage, in the first auxiliary storage according to the address translation table when occurrence of a failure in the computer system is detected; and

switching the first auxiliary storage, which is working, to ~~the~~ a second auxiliary storage.

7. (Currently Amended) A method for getting dump of a computer system that uses a plurality of pieces of virtual storage, said method comprising the steps of:

controlling each of the plurality of pieces of virtual storage according to an address translation table corresponding to each virtual storage, which indicates a location in a main storage, or in a first auxiliary storage, where information in each area of the plurality of pieces of virtual storage is stored;

transferring content of a virtual storage on the main storage from the main storage to the first auxiliary storage when a utilization ratio of the main storage becomes high;

storing content in each area of the plurality of pieces of virtual storage, which has been updated since the area of the virtual storage was allocated to the main storage, in the first auxiliary storage according to the address translation table when occurrence of a failure in the computer system is detected; and

switching the first auxiliary storage, which is working, to ~~the~~ a second auxiliary storage.

8. (Currently Amended) A method for getting dump of a computer system that uses virtual storage, said method comprising the steps of:

controlling the virtual storage according to an address translation table that indicates a location in a main storage, or in a first auxiliary storage, where information in a virtual-storage area is stored;

saving the address translation table in the first auxiliary storage if a page-out occurs in the address translation table; ~~and~~

storing content of the virtual-storage area, which has been updated since the virtual-storage area was allocated to the main storage, in the first auxiliary storage according to the address translation table when occurrence of a failure in the computer system is detected; and

restoring the address translation table, which has been saved in the first auxiliary storage, in the main storage before switching the first auxiliary storage, which is working, to a second auxiliary storage.

9. (New) An apparatus for getting dump of a computer system that uses virtual storage comprising:

a means for controlling the virtual storage according to an address translation table that indicates a location in a



main storage, or in a first auxiliary storage, where  
information in a virtual-storage area is stored;

a means for saving the address translation table in the  
first auxiliary storage if a page-out occurs in the address  
translation table;

a means for storing content of the virtual-storage area,  
which has been updated since the virtual-storage area was  
allocated to the main storage, in the first auxiliary storage  
according to the address translation table when occurrence of  
a failure in the computer system is detected; and

a means for restoring the address translation table,  
which has been saved in the first auxiliary storage, in the  
main storage before switching the first auxiliary storage,  
which is working, to a second auxiliary storage.

10. (New) An apparatus with a main storage and an auxiliary  
storage that can establish a virtual-storage area on said main  
storage and said auxiliary storage, comprising:

a processing part to output information in said main  
storage among information in said virtual-storage area to said  
auxiliary storage when a utilization ratio of said main  
storage becomes high;

a processing part to input said information output from said main storage to said auxiliary storage to said main storage when referring to or updating said information among the information in said virtual-storage area output from said main storage to said auxiliary storage; and

a processing part to output, when a failure occurs, the information in said main storage among the information in said virtual-storage area to said auxiliary storage to which said information in said main storage is output when the utilization ratio of said main storage becomes high, wherein:

dump information in said virtual-storage area when said failure occurs is a combination of said information output from said main storage to said auxiliary storage when the utilization ratio of said main storage becomes high and said information output from said main storage to said auxiliary storage when said failure occurs.

11. (New) A processing method of a computer system with a main storage and an auxiliary storage that can establish a virtual-storage area on said main storage and said auxiliary storage, comprising:

outputting information in said main storage among information in said virtual-storage area to said auxiliary storage when a utilization ratio of said main storage becomes high;

inputting said information output to said auxiliary storage to said main storage when referring to or updating said information output to said auxiliary storage among the information in said virtual-storage area; and

outputting, when a failure occurs in said computer system, the information in said main storage among the information in said virtual-storage area to said auxiliary storage to which said information in said main storage is output when the utilization ratio of said main storage becomes high, wherein:

dump information in said virtual-storage area when said fault occurs is a combination of said information output from said main storage to said auxiliary storage when a utilization ratio of said main storage becomes high and said information output from said main storage to said auxiliary storage when said fault occurs.